Historic American Engineering Record
OH-11A

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Winton Motor Carriage Co.
Berea Road and Madison Avenue
Cuyahoga County
Cleveland
Ohio

Photographs and
Written and Historic Data

Historic American Engineering Record
Heritage Conservation and Recreation Service
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Washington, DC 20243

The Winton Motor Carriage Company
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HAER OH-11A

NAME: Winton Motor Carriage Company

LOCATION: Cleveland, Ohio

DATE OF SETTLEMENT: 1898

PRESENT OWNER: General Motors

PRESENT USE: Rental units, industrial use

SIGNIFICANCE: Early auto maker; the nation's largest in 1899. Culmination of manufacturing methods and plant designs. Developed during Cleveland auto industry's first stage.

HISTORIAN: Tom Fisher

The Winton Motor Carriage Company
The Winton Motor Car Company

Cleveland's automobile industry began at a commercial level with Alexander Winton's sale of a one-cylinder motor vehicle to Robert Allison on March 24, 1898.[1] That year, The Winton Motor Carriage Company completed twenty-two passenger vehicles and eight trucks.[2] By 1899, the Winton company had become the nation's largest automobile manufacturer.[3] "Seventy-five percent of the reasons for Winton's success," said one writer in 1904, " can be summed up in one word - system."[4] The driving force behind that system was the company' founder and president, Alexander Winton.

Winton was born and raised in Scotland, receiving training as a marine engineer in Clyde. In 1885, at the age of 25, Winton came to Cleveland to work as the superintendent of the Phoenix Iron Works.[5] In 1890, Winton founded the company of Henderson and Winton. With his brother-in-law Thomas Henderson as its vice-president, Winton's company made parts for Cleveland's bicycle manufacturers.[6] By 1891, the company was producing its own bicycles. That led to the organization of the Winton Bicycle Company in 1892, with F. L. Alcott, president; Z. W. Davis, vice-president; George H. Brown, secretary; and W. H. Boardman, treasurer.[7] The company's factory stood on Perkins Avenue next to the Cleveland and Pittsburgh Railroad tracks. It produced 25 bicycles per week for a total of 6000 in 1892.[8]

The financial panic and resulting recession of 1893 cooled the national bicycling fad, leaving The Winton Bicycle Company with growing debts and a shrinking market. Although the company continued to produce bicycles, its engineer, Alexander Winton, began experimenting with internal combustion engines in 1893, eventually taking out over 100 patents on its design.[9]

In 1895, Winton made a working motorcycle, mounting his galoline engine to a bicycle frame. In the early part of 1897, he had developed a working motor carriage, becoming the sixth American to do so.[10] By 1897, Winton also had become president of The Winton Bicycle Company, with George H. Brown as his manager. Those two men, in conjunction with Thomas Henderson, organized The Winton Motor Carriage Company on March 1, 1897, with an authorized capitalization of $200,000.[11] They located their first factory in the former Brush Electric Company plant at the northwest corner of Belden Street (E. 45th Street) and Mason Avenue (Hough Avenue) directly behind their bicycle plant. The company produced its first commercial motor carriage in June 1897.[12] Its first order came that year from the City of Cleveland which wanted six, 6 - passenger buses to complement its existing trolley system. The city later cancelled the order when a trial run between the Winton plant and downtown Cleveland drew protests from irate citizens with frightened horses.[13]

In the winter of 1897 and the spring of 1898, The Winton Motor

Carriage Company produced four vehicles for sale. They each held two passengers, went ten miles per hour, and contained a chain drive, a friction clutch, and a vertical engine cooled by ice.[14] The company then placed advertisements in various national newspapers and magazines, guaranteeing refunds if the vehicles did not function properly. Alexander Winton had a talent for promotions. Beginning in 1897, he set a series of records which brought himself and his company international fame. He set the dirt track record for automobiles with a 1 mile, 48 second mile.[15] His racing car, the Bullet, became the first American automobile entered in a foreign race.[16] Winton made the first reliability run in automobile history, traveling between Cleveland and New York in 47 1/2 hours.[17] He also attempted the first cross-country automobile run, delivered the first mail by car, and produced the first commercial vehicle for sale.[18]

The most important first came with Winton's use of an efficient stationary assembly process.[19] Although the stationary assembly of automobiles had been used by other auto manufacturers, Winton succeeded in systematizing the process. He divided the sub-assembly process into separate departments and coordinated the operations within each, timing and adjusting the movements of each team of workers in order to eliminate any unnecessary effort.

The benefits of this systematizing quickly became apparent. The Winton Motor Carriage Company, which built only 30 vehicles in 1898, built between 18 and 25 vehicles per week in 1899.[20] Although

some of that increase stemmed from the expansion of the factory and staff, much of it resulted from the increased efficiency of the manufacturing methods.

The first Winton Motor Carriage factory contained a central three-story space with a wood-truss roof, monitor skylights, and a one-ton electric traveling crane at the second floor level. The floor, of diagonal wood boards, contained imbedded rails for moving carts. To one side of these rails stood the final assembly area, with its rows of vehicles elevated on saw horses. The sub-assembly departments occupied the two floors to either side of the central craneway. The machine shop filled one side of the first floor. The inspection and repair departments apparently occupied part of the other side. The body, tire, trim, and paint shops occupied the second floor aisles.

The two story wings had large timber trusses supporting shed roofs. Bearing walls, with double-hung windows and brick piers, formed the outside walls. Heavy timber posts, with bolster blocks, supported the solid wooden floors as well as the central gable truss over the clérestory. Various wood members attached to this post-and-beam structure supported machinery shafting and chain hoists.

Although this first factory accommodated Winton's manufacturing methods well enough, the structure's urban site did not allow much room for expansion. In 1902, The Winton Motor Carriage Company bought an eleven acre site for a new factory at the far western edge of

Cleveland. The site stood at the corner of Berea Road and Madison Avenue, with a 1/4 mile siding along the Lake Shore and Michigan Southern Railroad tracks. Winton hired the young Cleveland architect, Edward Anson Richardson to design its new plant. Previously with his father's firm, Richardson formed a one year partnership with Lewis W. Thomas to design the Winton factory.

The new plant retained the slow-burning mill construction of Winton's first plant, with its brick bearing walls, timber structural members, and solid wood flooring. The new plant also featured 9 over 9 double-hung windows with flat-arch brick lintels, engaged brick piers and painted company advertisements on the exterior, gabled Howe roof-trusses over the central two-story clerestory spaces, and Warren trusses over the adjacent side aisles. The difference between the two plants was in their layout. Rather than stacking the various sub-assembly areas on two floors, Richardson and Thomas placed each department in its own single-story building. The size, location, and function of each building within the plant was recorded in a 1904 booklet written by George S. Davis entitled "Making Winton Motor Carriages."[21]

Completed in 1904, The Winton Motor Carriage factory employed between 800 and 1,000 people and produced about 840 vehicles its first year. At the center of the grounds stood a two-story building with offices on the first floor and a drafting room and fire-proof vault on the second. Along the Lake Shore and Michigan Southern tracks stood

the boiler house and, in a separate building, the engine room and experimental shop. City water mains supplied two coal-fired boilers with water through a feed water heater and two reverse feed pumps. Steam moved from the boilers to engines which pumped the steam through the plant's radiator system and to the glue pots, enameling ovens, and dryer ovens. A vacuum pump in the boiler house returned the water to a cistern.

The engine room contained two, 200-horsepower and one, 100-horsepower Skinner automatic high-speed engines. These were direct-connected to two, 100-kilowatt and two, 33-kilowatt Western Electric direct-current generators which supplied power to the plant's incandescent and arc lights. A seven-panel white-marble Western Electric switchboard controlled the entire system. The experimental shop for the testing of new designs stood, partitioned off, at one end of the 150 foot by 40 foot power house.

In addition to the boiler room, the 300 foot by 80 foot boiler house contained a coal bin and gas house, which produced gas for the foundry's forges and annealing ovens by spraying gasoline through heated air and storing it in adjacent tanks. Next to the gas house stood a 125 foot by 80 foot tin shop and sheet metal department. The pipes, radiators, and sheet metal produced there went to an adjacent polishing room for finishing. A blacksmith shop and foundry occupied the rest of the building. It contained seven forges, an 800-pound steam hammer,

several gas-heated core hardening and annealing ovens, and a case-hardening furnace. Next to the ovens stood a row of 20 gas-fired retorts for melting the metal used in the castings.

Across the central rail siding from the boiler house and foundry stood a 300 foot by 100 foot machine shop. It employed about 200 people and contained machinery "of the most modern style." A raw materials and parts storage area stood at one end while a tool room, wheel assembly, and tire storage department occupied the other end of the shop.

The foundry and machine shop buildings stood perpendicular to two assembly buildings at the south end of the site. The building closest to the machine shop was 230 feet long and 100 feet wide. The parallel building was 237 feet long and 100 feet wide. These two buildings contained component assembly areas slong their side aisles and chassis assembly along their central craneways. Two-man teams built each chassis, which took between 15 and 18 hours to complete.

An electric traveling crane placed the completed chassis on a cart. Workers then pulled the engine and frame to a nearby testing area where a drive chain ran each motor for six hours at different speeds. The cart carried the chassis to a running gear department, also within the assembly buildings, where workers attached the axles, wheels, and steering gears to the chassis over grease pits.

With a temporary body mounted on each chassis, inspectors gave it a 15 mile run along a 7/8 mile board track which encircled the plant.

The track had steep grades and gravel bogs to simulate road conditions. The inspectors then delivered the finished chassis to the body and woodworking building at the north end of the site. That building stood 200 feet long and 168 feet wide. It had a central 200 foot by 80 foot clerestory space and side aisles containing machinery. It also had, like Winton's first factory, a second floor used for the storage of lumber. Steam-heated dry kilns stood at the south end of the building. A 25-horsepower motor on the second floor operated a system of blowers which transferred sawdust into an exterior hopper. At the center of the body department stood a glue room, partitioned off from the main space. It contained veneering presses and steam-heated glue pots.

After attaching the body to the chassis, workers moved the automobile to the painting building, 400 feet long and 100 feet wide. Each body received from 15 to 17 coats of paint, a process which required from 24 to 26 separate operations and took 27 days to complete. The painting building contained a 150 foot by 30 foot rough varnish room and a 300 foot by 30 foot finish varnish room along one side of the structure.

Adjacent to the painting building stood a 200 foot by 50 foot building containing the trimming and shipping departments. The trimming department, which employed women, had a cutting and sewing room and a leather upholstering room. Women made the leather seats

and canopy top and men attached them to the automobile before returning it to the painting building for a final coat. If destined for a local sales room, the automobile went to a finishing room where men attached the hood, horn, lamps, and other accessories. If destined for other cities, the automobile went to the shipping department where men covered the vehicle in muslin and secured it in a wooden box. A standard railroad car held three boxes.

A separate one-story service and repair building stood at the south end of the site along Madison Avenue. The 200 foot by 125 foot structure contained a machine shop, an assembly department, a woodworking shop, a paint and varnish department, an upholstery department, and a stock room with parts for all back models of the Winton automobile.

In 1904, The Winton Motor Carriage Company claimed to have "the largest plant ... in the world devoted exclusively to automobile manufacture."[22] That last phrase provided an important qualification, for the Olds plant in Lansing, Michigan was larger, although it produced marine engines as well as cars.[23] Nevertheless, the Winton factory attracted much attention and comment, standing as a culmination of the manufacturing methods and plant designs developed during the Cleveland automobile industry's first stage.

Winton made few changes in its plant until 1909, when the company began a major plant expansion. The factory's production rate had increased to 1,200 cars per year, with employment averaging at 1,500 people.[24] In March, 1909, The Winton Motor Carriage Company added a

45 foot by 23 foot polishing room to the existing foundry building, and in the summer of that year, it built a wooden shed-roof between the two assembly buildings.

In the summer of 1910, Winton replaced its earlier repair building with a three story structure designed by Samuel W. Watterson. Built at a cost of $50,000, the structure had brick bearing walls, packed wooden floors, steel beams and columns on the first two floors, and timber construction on the third. The roof had a slight pitch with a central skylight along the gable ridge. In the fall of 1910, The Winton Motor Carriage Company completed a $6,000, 150 foot by 80 foot foundry behind its new repair building. James W. Crisford, the foundry's architect, repeated the plant format of a single-story brick building encompassing a central clerestory space. Crisford's foundry differed in its use of steel columns, steel king-post roof-trusses, and steel knee braces. At about the same time, Edward Richardson's new firm, Richardson and Watts, designed a 700 foot by 25 foot, two story addition to the machine shop and painting building. Immediately adjacent to Berea Road, the building had double-hung windows, stone lintels, and brick buttresses defining each steel-framed bay. Although undocumented, this addition probably contained materials and parts storage, previously housed within the machine shop proper.

The only other major building constructed during this period was a single-story brick, steel, and reinforced concrete pattern vault located between the new foundry and repair buildings. Supervised by

J. F. Weidig, the building was 40 feet long and 30 feet wide. In 1913, Weidig added a 28 foot extension to the vault using the same materials.[25]

Although Winton made only minor changes to its plant after 1913, the company continued to prosper throughout World War I, building 2,339 automobiles in 1915.[26] That year, the company reorganized, changing its name to The Winton Motor Car Company. Meanwhile, Alexander Winton had begun experimenting with diesel and gasoline marine engines. In 1911, he built three, 40cycle 150-horse-power engines for his yacht, La Belle.[27] The following hear, he founded the Winton Gasoline Engine and Manufacturing Company. In 1913, he constructed the first American-built diesel engine.[28]

After World War I, Winton's marine engine company thrived while his automobile company declined. The post-war recession in 1920 left The Winton Motor Car Company operating at a 30% production capacity.[29]

In October, 1921, a committee of creditors began supervising the company's operations. Producing only 690 vehicles in 1922, The Winton Motor Car Company officially ceased operations on February 11, 1924, selling its plant in July of that year.[30] Alexander Winton continued to operate his marine engine works until 1930, when General Motors purchased it and renamed it The Cleveland Siesel Engine Division. That division ceased production in 1961.

The Winton factory had a series of owners after 1924, most of whom divided the large plant into smaller rental units. These later

owners demolished the body and woodworking building at the north end of the property as well as the power house along the rail siding. Minor alterations such as the blocking-in and replacement of windows and the addition of a new truck dock have also occured. In 1978, the smoke stack, with the name Winton still legible on its side, came down.

Many historians have cited Winton's continued production of high-priced automobiles as a reason for the company's failure.[31] Yet, the company's post-war conservatism, reflected in its uninspired advertising and its single model production line as well as in its maintenance of stationary assembly methods within an antiquated factory, must have contributed to its decline. For its last ten years, The Winton Motor Car Company attempted to rest upon its earlier laurels. In the automobile industry, that was a sure road to failure.

(Winton) Footnotes

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Addendum to

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PHOTOGRAPHS

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